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09/878,476	06/11/2001	John Hrincevich JR.	DP-304233	2000

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EXAMINER

WILLS, MONIQUE M

ART UNIT	PAPER NUMBER
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1746

DATE MAILED: 07/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/878,476	Applicant(s) HRINEVICH ET AL.
	Examiner Monique M Wills	Art Unit 1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 April 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-22 is/are rejected.
- 7) ☒ Claim(s) 7 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

This Office Action is responsive to the Amendment filed April 13, 2004. The following rejections have been overcome:

- Claims 4-5 & 11-12 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
- Claims 1-5 & 9-12 under 35 U.S.C. 102(e) as being anticipated by Timmons et al. U.S. Patent 6,316,148.
- Claims 6-8 & 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Timmons et al. U.S. Patent 6,316,148.
- Claims 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Timmons et al. U.S. Patent 6,316,148 in view of Hoshihara et al. U.S. Patent 4,906,540.

However, the rejections will be reinstated once the new matter rejection is removed.

The following new ground rejections are necessitated by amendment:

- Claims 1-3 & 5-22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.
- Claims 1-2, 6, 8-10, 13, 15, 16 & 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al., U.S. Patent 5,558,728.

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- Claims 1,3, 5, 9-12, 17 & 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Viala et al., U.S Patent 4,476,206.

Claims 7 and 14 are allowable.

Allowable Subject Matter

Claims 7 & 14 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The instant claims would be allowable over the prior art of record, because the prior art is silent to a pack-bonded, multiphase composite material comprising: a top and bottom layer of a first matrix material having a first thickness, and a middle layer of a second matrix material having a second thickness, wherein reinforcement material is disposed between each matrix layer.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-3 & 5-22 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement.

The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed

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invention. The term “substantially non-conductive” is not referred to or described by the specification. The term may broadly be interpreted as material having a conductivity range from semiconductive to non-conductive. Although the specification does describe ceramics (mostly semiconductive) and non-conductive materials, the term embraces a range of conductivities broader than the materials disclosed in the specification.

Claim Interpretation

The term “substantially” is often used in conjunction with another term to describe a particular characteristic of the claimed invention. It is a broad term. In *re Nehrenberg*, 280 F.2d 161, 126 USPQ 383 (CCPA 1960). In accordance with MPEP § 2173.05(b)(D), the term “substantially non-conductive” is broadly interpreted, and construed as any material within a range of conductivity from semiconductive to non-conductive. For example, when quantifying the percentage of conductivity, “substantially non-conductive” is presumed to include materials that are 50.0001% to 99.999% conductive. The lower end of the range includes semiconductive materials, such as ceramics, and the upper end embraces non-conductive materials, such as non-conductive fibers. Therefore, ceramic material such as silicon carbon (SiC) is a “substantially non-conductive” because the material has semiconductive properties. See the Semiconductor Glossary and the Recent Progress in Silicon Carbide Semiconductor Electronics Technology both attached herewith.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 6, 8-10, 13,15, 16 & 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi et al., U.S Patent 5,558,728.

With respect to claims 1,6, 9, 13 & 21-22, Kobayashi teaches a multiphase composite comprising three layers of matrix material interposed with reinforcement SiC fibers. See Figure 1. The "substantially non-conductive" SiC fibers are *oriented in one direction*, and are chemically dissimilar from the titanium alloy matrix (abstract). The alternately stacked layers are cold rolled to form a pack-bonded composite (col. 5, line 65- col. 6, line 3). With respect to claim 2, the reinforcement material is uniformly dispersed upon a surface of the matrix material (Fig. 1). With respect to claims 8 & 15, the first matrix material provides a predetermined smooth surface to the composite (Fig. 1). With respect to claim 10, the pack-bonding process comprises a cold-rolling process (col. 6, line 3). With respect to claim 16, the layers are continuous (Fig. 1 and abstract).

Kobayashi does not expressly disclose the fibers being oriented in a pack-bonded direction (claims 1,9, 21 & 22).

However, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made, to orient the fibers in a pack-bonded direction, since it has been held that rearranging parts of an invention involves only routine skill

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in the art. In re Japikse, 86 USPQ 70. Kobayashi teaches that the fibers are oriented in one direction (Figure 1) therefore, the fibers are oriented either perpendicular or parallel to the pack-bonded direction. It is unclear from the reference whether pack-bonded is performed perpendicular or parallel to the orientation of the fibers. Nonetheless, one of ordinary skill would be motivated to rearrange the direction of the fibers, to be parallel or perpendicular to the pack-bonding direction, because fiber orientation directly effects structural integrity of the reinforcement material.

Regarding the composite being “for use in a cell of a battery”, the language recites the intended use of the composite. If a prior art structure is capable of performing the intended use as recited in the preamble, then it meets the claim. See, e.g., In re Schreiber, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997). In the instant case, the composite of Kobayashi is capable of functioning in a battery environment, because titanium alloys are electrically conductive.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1,3, 5, 9-12, 17 & 20-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Viala et al., U.S Patent 4,476,206.

With respect to claims 1, 9, 17 & 21-22, Viala teaches a multiphase composite for a storage cell comprising a matrix material interposed with non-conductive reinforcement fibers (abstract & col. 2, line 52- col. 3, line 5). The reinforcement fibers

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oriented in one direction (Fig. 1), and are chemically dissimilar from the lead matrix (abstract). With respect to claim 3, the matrix material is lead (abstract). With respect to claims 5 & 12, the fibers are glass, alumina or metallized fibers (col. 2 line 65 – col. 3, line 5). With respect to claims 10 & 20, the pack-bonding process comprises a cold-rolling process (col. 3, lines 20-30). With respect to claim 11, the matrix is lead (abstract) and the reinforcement has a plurality of non-conductive fibers (col. 3, lines 1-5 and fig. 1). With respect to claims 21-22, the matrix layer is electrically conductive (col. 4, lines 50-61). With respect to claim 17, the composite is cut to form a battery plate (col. 3, lines 20-30 and Fig. 1).

Viala does not expressly disclose that the fibers are oriented in the pack-bonded direction or a second matrix layer (claims 1,9,17 & 21-22).

However, it would have been obvious to one of ordinary skill in the art at the time the instant invention was made, to orient the fibers in a pack-bonded direction, since it has been held that rearranging parts of an invention involves only routine skill in the art. In re Japikse, 86 USPQ 70. Viala, illustrates, in Figure 1, that the fibers are oriented in one direction. Therefore, the fibers are oriented either perpendicular or parallel to the pack-bonded direction, but is unclear whether pack-bonding is performed perpendicular or parallel to the orientation of the fibers. Nonetheless, one of ordinary skill would be motivated to rearrange the direction of the fibers, to be parallel or perpendicular to the pack-bonding direction, because fiber orientation directly effects structural integrity of the reinforcement material.

Regarding the second matrix layer, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ a second matrix layer, since it has been held that mere duplication of the essential working parts of a

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device involves only routine skill in the art. *St. Regis Paper Co. v. Bemis Co*, 193 USPQ 8. The skilled artisan recognizes that the amount of matrix material directly effects electrically conductivity of the electrode.

Concerning claim 17, it would have been obvious to one of ordinary skill in the art at the time the invention was made to expand the lead grid, in order to increase the surface area and thus, conductivity of the electrode.

Response to Arguments

Applicant's arguments, filed April 13, 2004 with respect to the rejection(s) of claims 1-5 & 9-12 as being anticipated, and claims 6-8 & 13-20 as being obvious over Timmons et al., U.S. Patent 6, 316,148, have been fully considered and are persuasive. The amendment necessitating the reinforcement material to be "substantially non-conductive" renders the Timmons reference both non-anticipatory and non-obvious over the respective claims above. Specifically, Timmons teaches a highly conductive reinforcement material, and there is no teaching or suggestion of non-conductive reinforcement material. Therefore, the rejections have been withdrawn. However, upon further consideration, new ground(s) of rejections are made, individually, in view of Kobayashi et al., U.S. Patent 5,558,728 and Viala et al., U.S. Patent 4,476,206.

The Examiner would like to point out the rejections of Timmons '148 and Timmons'148 in view of Hoshihara '540 will be reinstated once new matter is removed from the amended claims.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Composites, by Serdar S. Elgun, November 19, 1999.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Monique Wills whose telephone number is (571) 272-1309. The Examiner can normally be reached on Monday-Friday from 8:30am to 5:00 pm.

If attempts to reach Examiner by telephone are unsuccessful, the Examiner's supervisor, Randy Gulakowski, may be reached at 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.


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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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06/20/04


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